

Rhodora

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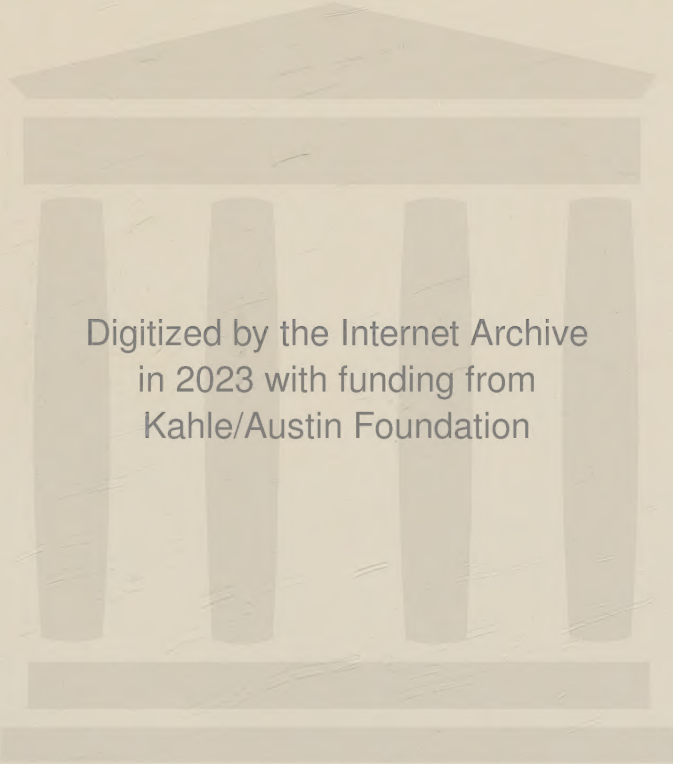
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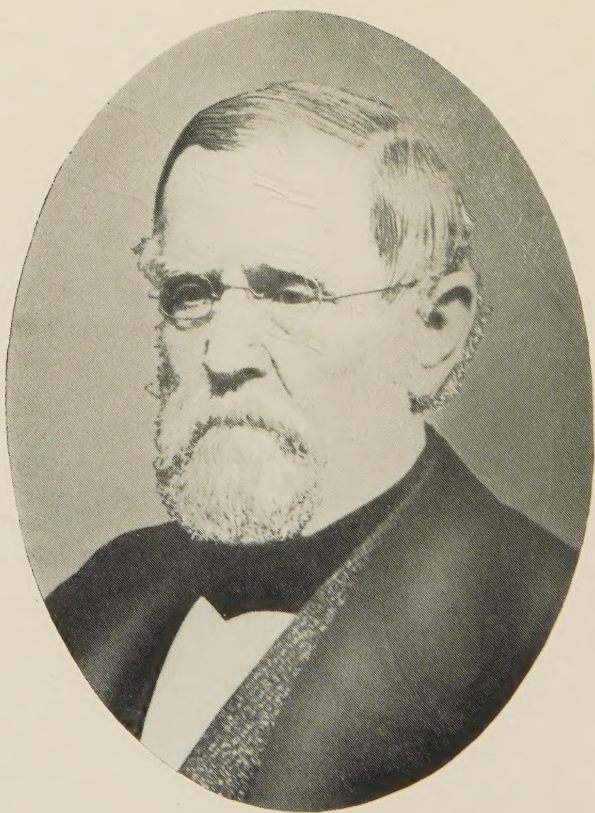
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CHARLES CHRISTOPHER FROST.
(1805-1880.)

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 6

February, 1904

No. 62

RECOLLECTIONS OF CHARLES CHRISTOPHER FROST.

ELIZABETH B. DAVENPORT.

(With portrait.)

(Read at the Eighth Annual Meeting of the Vermont Botanical Club.)

THE recent transfer of the valued herbarium of Mr. C. C. Frost to the University of Vermont makes it fitting at this time and place that something should be said regarding the personal history of this keen but modest botanist. I have been asked to tell you what I have known of him during many years' residence in Brattleboro, where he lived and worked.

To-day the world is alert and on every hand interested in scientific inquiry. Even our smaller communities are penetrated by the spirit of research, and the student may have the stimulation and inspiration of daily companionship with those who share his special interests. Some of you will, however, remember the small New England village of thirty years ago, will recall its relative simplicity not only in the outward mode of living but in its intellectual activity, and can picture the still simpler life which prevailed two or three decades earlier. The centre of all culture was essentially the home. The literary club, the lyceum, extensive and well selected libraries, and carefully arranged museums, which are now multiplying throughout our country, were then relatively rare. The atmosphere was not one to stimulate research. The impulse must in those days have come much more from natural aptitude, and to persons of character strong enough to take the initiative, to men who might be leaders.

To have known Mr. Frost as he was and to have seen the high character of his intellectual attainments notwithstanding the limitations of his environment, makes one long to have known him as he

might have been, had his working years fallen later in the century, when he would have been in closer touch with the moulding influences of a wider culture, and his work influenced by the advanced methods now prevalent in botanical research.

Mr. Frost always impressed me as possessing in high degree the characteristics we call puritan. Thrift, industry, perseverance, simplicity, singleness of purpose, integrity, and great reserve, were the salient features of his personality. The inspirational forces of life were his, but he lacked the surroundings that tend to life's enrichment. He had a fine face, indicating at once strength of character, the clear, dark and penetrating eyes being most pleasant to meet and suggesting the fine fibre of the man. In manner he was quietly courteous, his words were few and to the point.

For almost half a century Mr. Frost followed his trade in the one shop, and for most of this time lived in the one house, which stood near Whetstone Brook. It was a typical house of our early New England villages, long, low, and painted white, the chambers enclosed in the sloping roof. The site of the shop is now occupied by a modern business block. The house is still standing but not upon its original foundation.

Mr. Frost's business and studies held a strange companionship. All the business hours of the day found him at the bench or counter, usually the former. It was there that the visitor found him with shoe upon his aproned knee, his hands busy with awl and thread, and an open book by his side. His whole attention came directly to your need, though you knew his mind had dropped an absorbing train of thought to meet your wants. At noon the shop was closed for an hour, fully half this time being spent in the attic room, where his botanical work was done. It is easy to imagine the almost irresistible impulse to extend this short half hour, the reluctance with which researches were broken off just at a point of critical interest; yet the observer could not see but that the door of his treasure house — a veritable treasure house it was to him — was closed as readily as the door of his shop. Rare occasions there were when the shop remained closed one, two, or even three days at a time. For when some friend came, some one with kindred interests, business was laid entirely aside and even his household saw him only at meals. Our imagination need not be great or intuition especially sympathetic to tell us that these days must have been oases in life's journey. But

the visit over and the friend gone, his hours were immediately readjusted to the old routine.

To the casual acquaintance Mr. Frost spoke of his botanical interests only when questioned, but he welcomed everyone who came to him for botanical help, assisted courteously, and was always ready to give careful directions for finding the station of any plant for which the student might be inquiring.

When this reserved man labeled a specimen "more precious than gold" he was giving for a moment a swift vision of the enthusiasm and love for his special calling which lay deep in his strong nature, where it burned like a fine fire. Mr. Frost's character in its entirety makes him a representative of a type challenging admiration, compelling respect and inspiring to ideals of patient, thorough, and persevering work. It is not necessary for me to speak specifically of Mr. Frost's work in his chosen field of botanical research. Any discussion of this subject would come far more fittingly from the University of Vermont, which has just done so much to honor his name and has given his work a permanent place and association with her history.

SPIRANTHES NEGLECTA.

OAKES AMES.

(Plate 51.)

WHAT I propose to call *Spiranthes neglecta*, is a rare New England orchid, often confused with *Spiranthes praecox*, Watson, of the Southern states. It is scantily represented in most herbaria, though the known stations from which it is reported are numerous enough to show that the characters considered of specific value are not confined to a localized form. In the New England Botanical Club Herbarium there is a single specimen from Connecticut; in the Gray Herbarium there are several specimens, among them one from Washington, D. C., and one from Georgia, but none from New England, if we exclude a specimen with nothing more definite on the label as to habitat than, "collected on the Cape, August, 1896," which conjecturally may be ascribed to Massachusetts. Mr. Walter

Deane has compared plants from Easton, Massachusetts, with plants from Milford, Connecticut, in his herbarium, and has pronounced them specifically similar, and unlike *S. praecox*, Watson, collected in New Jersey.

Among the Orchidaceae published in RHODORA in the "Lists of New England Plants," Mr. Emile F. Williams reports *S. praecox*, Watson, as having been found in Massachusetts, Rhode Island and Connecticut. As I have seen no true *S. praecox* from these states, and as they are north of the northern limits of this species, the plants Mr. Williams refers to may be *S. neglecta*. It is also reported from Middlesex County, Massachusetts, by Mr. Ernest C. Smith (RHODORA, i. 97), as *S. graminea*, var. *Walteri*, Gray. According to the "Portland Catalogue," *S. praecox* is ascribed to Maine. Its absence, however, from the Maine *Spiranthes* in the New England Botanical Club Herbarium is remarkable, especially so, as the representation of the genus from this state is unusually rich and comprehensive. There is, however, in this herbarium a specimen of *S. cernua*, collected by J. C. Parlin in wet places at Hartford, Maine, Sept., 1885, which bears on the label the name *S. graminea*, var. *Walteri*. In the preparation of his List of New England Orchids, Mr. Williams was unable to authenticate the report of the "Portland Catalogue" regarding *S. praecox*, so that it seems advisable to omit this species at present from the Maine flora.

During August, 1903, Mr. Robert G. Leavitt, in company with Mr. H. D. Sleeper, found many plants of this neglected species at Black Point, Crescent Beach, Connecticut, where it grew in dry fields not far from the seashore. In early September, Mr. Sleeper obtained additional material from the same locality, and later, in the same month, Mr. A. A. Eaton, while collecting near North Easton, Massachusetts, came upon several stations where it was associated with *S. gracilis* and *S. cernua*, var. *ochroleuca*, hybridizing with the former.

In RHODORA (v. 261) I described the hybrid and for comparison showed drawings of the lips of the parents. The lip of what is there called *S. praecox*, Watson, as shown in the illustration is decidedly ovate in outline, and therefore very different from the oblong lip of the true *S. praecox*. In the dried state *Spiranthes neglecta* may usually be distinguished from *S. praecox* by the color and texture of the flowers, these being of a deeper brown. The lip, as a rule, is more opaque, and thicker, with the nerves showing less distinctly

than in *S. praecox*. The diacritical characters which distinguish *S. neglecta* from *S. praecox* beyond uncertainty are mainly in the lip. The callosities of the latter are decidedly marginal and basal, and the base of the lip passes rather obliquely into the claw behind them. The sides of the basal half of the lip are quite parallel and leave a very narrow, almost imperceptible margin where they pass round the callosities. In *S. neglecta*, on the other hand, the callosities do not have the appearance of being marginal, and the base of the lip

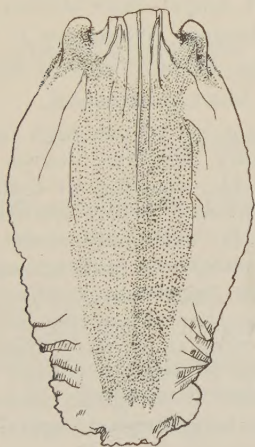


Fig. 1. Lip of *Spiranthes neglecta*.



Fig. 2. Lip of *Spiranthes praecox*, Wats.

curves gradually into the claw behind them. The sides of the basal half of the lip swell outwards and where they pass round the callosities leave a conspicuous margin. Although in general outline the lip varies from narrowly to broadly ovate and is sometimes lanceolate, it is always dilated at the proximal half and tapers noticeably to the apex. *S. praecox* is very constant in the lip outline, and when spread out the sides at base and near the apex appear to be equidistant or very nearly so, or sometimes the apical third is broader than the base.

The blooming season of *S. praecox* begins in March in the far South and somewhat later as the northern boundary of its range is approached. *S. neglecta* does not bloom till August in New England, but in Georgia, which seems to be the southernmost limit for it, the flowers open in June.

Spiranthes neglecta resembles *S. gracilis*, but only in a general way, as the elongated leaves, hyaline-margined floral bracts, pubescent rhachis (*S. gracilis* is usually glabrous or only sparsely pubescent), ovate lip, and yellowish flowers render it clearly distinguishable from that species. As it grows together with *S. cernua*, var. *ochroleuca* and *S. gracilis*, one might well regard it a hybrid derived from them, if several characters, for which it would be difficult to account on such a supposition, did not exist. The more robust plants of *S. neglecta* recall *S. cernua*, var. *ochroleuca*, but differ from it, among other things, in the shorter floral bracts, longer, more slender, linear spike, and in the narrower fugacious leaves. When dry *S. cernua*, var. *ochroleuca* is of a yellow-brown color, while *S. neglecta* especially in the leaves is deep-brown, sometimes blackish in aspect.

SPIRANTHES neglecta, sp. nov. Plant 15–56 cm. high (average height 33 cm.). Roots elongated, fleshy, fusiform; leaves linear-lanceolate, 7–15 cm. long, 8–9 mm. wide, tapering to both ends, mostly basal, the lower ones usually passing before anthesis, the upper ones withering early; cauline bracts acuminate, acute; scape smooth below, summit and rhachis pubescent, pubescence often dense, frequently extending below the uppermost cauline bract; floral bracts lanceolate-acuminate, longer than the ovaries, conspicuously hyaline-margined, margins often crenulate or wavy, base sometimes auriculate; flowers (average length of perianth 7 mm.) mostly yellowish-white, pubescent, in a regular or irregular, one-ranked spiral; spike 1–1.5 cm. thick, 8–15 cm. long, slender; lateral sepals 3-nerved, lanceolate, 6–10 mm. long, margin involute; upper sepal adhering lightly to the oblong, obtuse, 3-nerved petals; lip narrowly ovate to broadly ovate when flattened out, rarely lanceolate, strongly channeled longitudinally along the middle, apical third with an erose margin, central portion suffused with yellow or greenish-yellow, veining obscure, base gradually rounded into a short claw; callosities somewhat curved, copiously hairy on the inner side, smooth above, gynostemium much the same as in *S. cernua*, Richard. — In dry, gravelly fields, and in sandy places by the seashore, New Castle Co., Delaware, July 27, 1863; Ocean City, Maryland, July 25, 1878 (*A. Commons*); Closter, Bergen Co., New Jersey, July and August, (*C. F. Austin*); Vicinity of Washington, D. C., August, 1897, (*E. E. Steele*); Millen, Georgia, June 5, 1901 (*Roland M. Harper*) a single specimen in Gray Herbarium; Oxford, Connecticut, August, 1887, (*E. B. Harger*) a single specimen in New England Botanical Club Herbarium; Crescent, Connecticut, August, 1903, (*R. G. Leavitt & H. D. Sleeper*); Easton, Massachusetts, Sept., 1903, (*A. A. Eaton*) — type.

Fig. 1 shows the lip of *S. neglecta* (from Easton, Mass.) flattened

out. Fig. 2 shows the lip of *S. praecox* (from Thomasville, Georgia) similarly treated: *both from material preserved in alcohol.*

AMES BOTANICAL LABORATORY, North Easton, Massachusetts.

EXPLANATION OF PLATE 51.—*Spiranthes neglecta* to show inflorescence, leaves, and roots. (Natural size.) Fig. 1, petal ($\times 3$). Fig. 2, lateral sepal to show involute margin ($\times 3$). Fig. 3, flower ($\times 3$). Fig. 4, upper sepal ($\times 3$). Fig. 5, lip, flattened out to show outline ($\times 3$).

MISCELLANEOUS NOTES ON NEW ENGLAND FERNS,—VI.

GEORGE E. DAVENPORT.

NOTE 10.—A NEW FORM OF *NEPHRODIUM SPINULOSUM*. Somewhat late in the summer of 1902 Mr. Henry A. Purdie brought to me an unusual form of *Nephrodium spinulosum*, Desv., which he had collected in Concord, Massachusetts. His specimen consisted of one large frond with narrowly angular aculeate segments resembling some forms of *Polystichum angulare*, the whole presenting an appearance quite unlike the ordinary forms of *N. spinulosum*.

Mr. Purdie reported finding only one plant, which he carefully located for further investigation, and in August, 1903, I had the pleasure of visiting the locality with him and was able to obtain a few additional fronds for specimens. I also secured, by detaching them from the main rootstock, two offshoots for propagation, and was able to separate these subsequently into two more, thus obtaining four small plants as a nucleus for further increase. The swamp in which the original plant was found abounds with *intermedium* and *dilatatum* forms of *N. spinulosum*, and characteristics of each of these are to be seen in the make-up of the new form. Indeed, it might be not inaptly described as a very much dissected var. *intermedium* with the outlines of var. *dilatatum*. In the vicinity of the plant there were a few large individuals of var. *intermedium* and from them the new fern was readily distinguishable by its unique architectural form, notwithstanding some resemblance to its nearest neighbor.

As to its probable origin two theories present themselves; for it may be either a hybrid or a spore variation. In this instance I am

not inclined to accept the hybrid theory because, although characteristics of var. *intermedium* and var. *dilatatum* may be found in its composition, these are not sufficiently obvious or pronounced to justify us in assuming the hybrid relationship of the new form. The special feature of Mr. Purdie's fern is the narrow and angular form of the segments, and in this respect there is a resemblance to some of the *angulare* forms of *Polystichum aculeatum*. In that species the segments are usually auricled at the base on the anterior side, and the auricle is essentially a characteristic of the genus; nevertheless the auricle is frequently wanting altogether, and in this way forms arise to which our fern bears a strong resemblance. In fact, if any form of *P. aculeatum* grew near by there might be grounds for assuming a hybrid relationship between it and the new form. Then, too, I believe with the distinguished and lamented botanist, Thomas Meehan, that the tendency to vary inherent in all plants is sufficient to account for most of these exceptional forms, and that it is rarely needful to resort to the theory of hybridity. It is noteworthy also that where hybridity has actually existed the resultant characters have been sufficiently evident even when actual proof was wanting; and the recent successful experiments of that very clever fern-student, Miss Margaret Slosson, in demonstrating hybridity in *Asplenium ebenoides* and *Nephrodium cristatum* \times *marginale*. show very conclusively that in such instances proof is attainable.

I am much more inclined to the belief that the Concord fern is a spore-variety. There is, in fact, no reason why the results of spore-reproduction in the fern-plants should not be as diverse as those of seed-reproduction in the flowering plants. I remember to have seen once in a florist's greenhouse six plants of a *Selaginella*, all raised from the spores of a single individual, which was still growing near by, yet they were so different that had their origin not been positively known they might have passed as different species. Therefore, I am inclined to consider this fern as having originated from a spore of either var. *intermedium* or var. *dilatatum*, and here in comparing the different characters, I find those which suggest var. *dilatatum*, to be of a superficial nature, such as the mere outlines of the lamina and the angles of direction of the different parts, while those which suggest var. *intermedium* are fundamentally associated with fructification and vestiture. I therefore regard the plant as a natural variation of *Nephrodium spinulosum*, var. *intermedium*, and

think it will be better treated as a variety than as a mere form, as the entire plant shows the peculiar character, which is again reproduced in its offspring. It has apparently been established for some years, having attained large proportions and, fortunately, there appears to be little or no danger of its being disturbed, as the surrounding woods are safe-guarded from trespass. The plant is certainly unique in every way and entitled to recognition. I therefore submit the following description:—

NEPHRODIUM SPINULOSUM, var. **Concordianum**, n. var. (PURDIE'S CONCORD NEPHRODIUM.) Original plant large, with matured fronds two and one-half to three feet in height. Rootstock as in the species; crociers densely clothed with rich brown scales; stipites one-fourth to one-third the length of the whole frond, greenish-stramineous in the early stages but at length turning to a warm brownish tone, channeled along the face, rounded at the back; scales at base broadly ovate-acuminate, dark brown with deeper centres, the upper pale and intermixed with narrower linear scales and chaff; laminae one and one-half to two feet long, correspondingly broad, narrowing from below the middle upward to an acuminate apex, tripinnate throughout, the inferior pinnules on the lowermost pinnae of the larger fronds two inches long and pinnate with pinnatifid or deeply lobed oblique divisions; segments distinct, narrowly angular, about one-eighth of an inch wide, sharply aculeate, the base so narrow as to appear stalked (in some cases really so); rachises scaly throughout with small pale scales and chaff; venation pinnate; sori below the apex; indusia and surfaces minutely glandular.

Habitat: rich swampy woodland, Concord, Massachusetts, autumn of 1902, *H. A. Purdie & Wm. Brewster*; August, 1903, *H. A. Purdie & G. E. Davenport*.

As the discoverer of this interesting fern protested with his usual modesty against my associating his name with it, I have decided to dedicate it to Concord. Type specimens from the original plant will be deposited in the Gray Herbarium, the Herbarium of the New England Botanical Club, and the Davenport Herbarium (Massachusetts Horticultural Society).

MEDFORD, MASSACHUSETTS.

PRELIMINARY LISTS OF NEW ENGLAND
PLANTS,—XIII. JUNCACEAE.¹

M. L. FERNALD.

[The sign + indicates that an herbarium specimen has been seen; the sign — that a reliable printed record has been found.]

	Me.	N. H.	Vt.	Mass	R. I.	Conn.
<i>Juncus acuminatus</i> , Michx.	+	+		+	+	+
“ <i>alpinus</i> , Villars	+		+			
“ “ <i>var. insignis</i> , Fries	+		+			
“ <i>articulatus</i> , L.	+	+	+	+	+	+
“ “ <i>var. obtusatus</i> , Engelm.	+	+	+	+	+	+
“ <i>balticus</i> , Dethard	+	+		+		
“ <i>brachycarpus</i> , Engelm.				+		+
“ <i>brachycephalus</i> , Buchenau	+		+	+		+
“ <i>brevicaudatus</i> , Fernald	+	+	+	+	+	+
“ <i>bufonius</i> , L.	+	+	+	+	+	+
“ “ <i>var. congestus</i> , Wahl.	+					
“ “ <i>var. halophilus</i> , Buchenau & Fernald	+			+		
“ <i>canadensis</i> , J. Gay	+	+	+	+	+	+
“ “ <i>var. subcaudatus</i> , Engelm.						+
“ <i>debilis</i> , Gray						+
“ <i>dichotomus</i> , Ell.				+		+
“ <i>Dudleyi</i> , Wiegand	+	+	+	+	+	+
“ <i>effusus</i> , L.	+	+	+	+	+	+
“ “ <i>var. compactus</i> , Lejeune & Courtois	+			+		
“ <i>filiformis</i> , L.	+	+	+	+		
“ <i>Gerardi</i> , Loisel	+	+	+	+	+	+
“ <i>Greenii</i> , Oakes & Tuckerman	+	+	+	+	+	+
“ <i>marginatus</i> , Rostk.	+	+	+	+	+	+
“ <i>militaris</i> , Bigelow	+			+	+	+
“ <i>nodosus</i> , L.	+	+	+	—		+
“ <i>oronensis</i> , Fernald	+					
“ <i>pelocarpus</i> , E. Meyer	+	+	+	+	+	+
“ <i>secundus</i> , Beauv.	+		+	+	+	+
“ <i>stygius</i> , L., <i>var. americanus</i> , Buchenau	+					
“ <i>subtilis</i> , E. Meyer	+					

¹ Printed in RHODORA as supplementary material.

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
<i>Juncus tenuis</i> , Willd.	+	+	+	+	+	+
“ “ var. <i>anthelatus</i> , Wiegand	+			+		+
“ “ var. <i>Williamsii</i> , Fernald	+	+	+	+	+	+
“ <i>Torreyi</i> , Coville				+		
“ <i>trifidus</i> , L.	+	+	+			
“ <i>Vaseyi</i> , Engelm.	+					
<i>Luzula campestris</i> , DC., var. <i>frigida</i> , Buchenau .	+					
“ “ var. <i>multiflora</i> , Celakovsky			+	+	+	+
“ <i>confusa</i> , Lindeberg	+	+				
“ <i>parviflora</i> , Desv.	+	+	+	+		
“ <i>saltuensis</i> , Fernald	+	+	+	+		+
“ <i>spicata</i> , Desv.	+	+	+			

NOTES UPON THE ABOVE LIST.

Juncus alpinus, Villars, with castaneous capsules, is the characteristic plant of the Gulf of St. Lawrence and extends locally southward to the St. John valley in Maine and to Willoughby Lake, Vermont. *J. alpinus*, var. *insignis*, Fries, the commoner plant of the St. John and Kennebec valleys and occurring locally on Lake Champlain, has pale capsules and is usually a larger plant. Both forms occur in northern Europe.

Juncus articulatus, L. The typical form has brown flowers, the castaneous capsules 3-4 mm. long, gradually tapering to the mucronate tip. Var. *obtusatus*, Engelm., with greenish or greenish brown flowers, the pale capsules 2.5-3 mm. long and abruptly mucronate, often replaces it in brackish or alkaline situations, and on the coast is occasionally found in salt-marshes.

JUNCUS brevicaudatus. *J. canadensis*, var. *brevicaudatus*, Engelm., Trans. St. Louis Acad. ii. (1866) 436; var. *coarctatus*, Engelm. l. c. ii. (1868) 474. This northern plant has long seemed to the writer to be unfortunately treated as a form of the essentially southern and, in New England, mostly coastal *J. canadensis*. A detailed examination of the great mass of material now accumulated by the Gray Herbarium and the New England Botanical Club indicates several important points of distinction and confirms the long established conviction, which has been shared by others who know the two plants in the field.

Juncus canadensis is a stout plant with the inflorescence (when well developed) ovoid or broader in outline, at most one-third longer than broad, the branches spreading or subascending; the glomerules

are densely many-flowered, the perianth-segments awl-pointed, equalling or slightly shorter than the abruptly short-pointed capsules; and the seeds are 1 to 1.8 mm. long. *J. brevicaudatus* is a slender plant with the inflorescence elongate, strict, and narrow, three to six times longer than broad; the glomerules are 3-7-flowered, the outer perianth-segments (sepals) acute, but scarcely awl-pointed, the inner (petals) acute or obtusish, and much shorter than the prismatic gradually pointed capsules; and the seeds are very rarely more than 1 mm. long. Furthermore *J. canadensis*, which occurs in marshes, swampy meadows, and on wet shores, is commonest on the coastal plain from southern Newfoundland to Louisiana, and on the upper St. Lawrence and the Great Lakes, though it is occasionally found at other inland stations. Its average fruiting season is in early September, fruited (but not over ripe) material from 40 stations showing a range from August 12 to October 8 with an average of September 9. *J. brevicaudatus*, on the other hand, abounds in damp open soil, roadsides, ditches, wet rocks, shores, etc., from Newfoundland to the upper Saguenay, west to Minnesota, and south, mostly in cold bogs, to the mountains of Pennsylvania. Its fruiting season is four weeks earlier in the same region than that of *J. canadensis*, mature specimens from 54 stations showing a range from July 16 to September 9, with an average of August 12. In view of these marked differences the writer feels justified in treating the strict northern plant as a distinct species.

Juncus effusus, var. *compactus*, Lejeune & Courtois, Compend. Fl. Belg. ii. (1831) 23, with inflorescence glomerulate, has passed in America as *J. effusus*, var. *conglomeratus*, Meyer (*J. conglomeratus*, L. *J. Leersii*, Marsson) which is a distinct species of Europe, known also in America from Newfoundland and Nova Scotia. *J. effusus*, var. *compactus*, is the common form of the species in Cape Breton and Nova Scotia proper and occurs frequently in eastern Maine, but is apparently unusual southward.

JUNCUS (POIOPHYLLI) oronensis. Perennis dense caespitosus. Caules erecti stricti pallide straminei vel flavo-virides 3-6 dm. alti. Folia basilaria; vagina pallide fusca vel rosea; auriculæ membranaceae vel fere scariosae; lamina gracillima firma valde involuta 1-2 dm. longa. Inflorescentia subdichotoma 2.5-9 cm. longa 1-4 cm. diametro; rami stricti suberecti, flores plerumque secundi distincte distantes vel rarius approximati et umbellulati. Bractea erecta inflorescentiam multo superans. Flores 4-5 mm. longi pallide straminei. Tepala lanceolato-subulata marginibus angustis membranaceis vel omnia subaequilonga vel tria interna paullo breviora. Stamina 6 tepalis $\frac{1}{2}$ breviora; filamenta linearia; antherae lineares filamenta aequantes. Fructus tepalis brevior oblongus trigonus truncato-emarginatus lateribus planis vel prope apicem paullo concavis;

stigmata sessilia vel subsessilia. Semina 1 mm. longa circa 0.2 mm. diametro sigmoideo-fusiforma basi et apice albo-caudata, caudis quam nucleus fuscus ter brevioribus, longitudinaliter circa 15-costata reticulata.—Hab. in paludibus sphagnosis. Orono et Rangeley, Maine.

Perennial, densely caespitose. The stiff erect culms 3–6 dm. high, pale straw-color or yellow-green. Leaves mostly basal; the sheaths pale brown or pinkish, with membranous or almost scarious auricles; the blades very slender, firm, strongly involute, 1–2 dm. long. Inflorescences usually much overtopped by the erect bracts, subdichotomous, 2.5–9 cm. long, 1–4 cm. in diameter; the flowers mostly secund and distinct along the strict suberect branches, rarely umbellulate. Flowers 4–5 mm. long, pale straw-color, the lance-subulate segments firm, with narrow membranous margins, subequal or the inner slightly shorter. Stamens half as long as the perianth-segments; the linear anthers equalling the slender filaments. Capsule shorter than the perianth, oblong, trigonous, truncate-emarginate; the sides flat or a little concave toward the tip; stigmas sessile or subsessile. Seeds 1 mm. long, about 0.2 mm. thick, sigmoid-fusiform, white-caudate at base and apex, the tails one-fourth as long as the brown body, longitudinally about 15-ribbed, reticulate.—MAINE, swamp with *J. Vaseyi* and *J. tenuis*, var. *anthelatus*, Orono, August 13, 1890, July 21, 1892 — no. 300, distributed as *J. dichotomus*, type (*M. L. Fernald*); Rangeley, 1882 (*Kate Furbish*).—This plant has long been a perplexing one. At Orono, where it abounds in a dry sphagnum-carpeted remnant of a larch- and alder-swamp, it is mixed with the characteristic northern *J. Vaseyi* and *J. tenuis*, var. *anthelatus*, and when first found it was very immature. From this immature material, with its strongly involute firm leaves, the plant was referred by a student of the genus to whom it was shown to *J. dichotomus* of the southern coastal plain. In 1892 excellent fruiting material was collected, and without further examination placed with that of earlier date. The plant seemed in some points so unlike *J. dichotomus* that Dr. K. M. Wiegand, when studying the group for his recent valuable synopsis¹ was unwilling to leave it with that species, but, as indicated on the herbarium sheets and in a letter to the collector, he preferred to consider it a doubtful form as nearly allied to his *J. tenuis*, var. *anthelatus*. Recently, in overhauling some specimens collected in 1882 by Miss Kate Furbish at the Rangeley Lakes, far above the level in Maine of the coastal plain, the writer was surprised to find mixed with good *J. Vaseyi* fruiting material of the plant which at Orono is associated with *J. Vaseyi* and which now proves to be a species quite unlike either *J. dichotomus* or *J. tenuis*. In both those species the capsules are ovoid or obovoid, rounded to the mucronate tip, and with rounded or convex sides; the tiny oblong seeds (0.3–0.4 mm. long) are bluntly apiculate; and the anthers are distinctly shorter than the fila-

¹ Wiegand, Bull. Torr. Cl. xxvii (1900) 511–527.

ments. In *J. oronensis*, on the other hand, the capsule is oblong, truncate-emarginate, at most mucronulate, the sides flat or at tips concave; the larger spindle-shaped seeds have distinct white caudate appendages; and the anthers equal the filaments. These characters place the plant very near the northern *J. Vaseyi*, but from that it is clearly distinct in its elongate subdichotomous inflorescence, long bracts, capsule shorter than the perianth, and in the short caudate seeds, those of *J. Vaseyi* having the tails more than half as long as the dark body.

Juncus Torreyi, Coville. The only New England station known is along a railway ditch at Chelsea, Massachusetts, found by Mr. W. P. Rich¹ in 1901. The species is ordinarily of inland distribution, from western New York and adjacent Pennsylvania westward, and it is probable that the Chelsea plant is of recent introduction.

Luzula campestris, DC., in its typical form, a loosely caespitose and strongly stoloniferous plant with 2-6 large (6-7 mm. thick) castaneous spikes on wide-spreading or decurved peduncles, seems to be confined to northern Europe. Its common representative in America, as in parts of Europe and Asia, is var. *multiflora*, Celakovsky, Prod. Fl. Böhmen (1869) 85 (*L. multiflora*, Lejeune), densely caespitose, with the 3 to 12 subglobose or oblong ferruginous or pale brown (greenish in deep shade) spikes on mostly ascending peduncles. Var. *frigida*, Buchenau, Oest. Bot. Zeitsch. xlviii. (1898) 284, with very short peduncles and subglomerulate dark brown to nigrescent spikes, occurs from Greenland to Newfoundland, and reaches our district in northern and eastern Maine.

JUNCUS BUFONIUS AND ITS REPRESENTATIVES IN AMERICA.

During the summer of 1902 members of the New England Botanical Club who botanized on the coast of eastern Maine and the Maritime Provinces were much interested in the variations of *Juncus bufonius*, and particularly in its behavior upon the salt marshes and below the limit of high tide. Abundant material was secured and during the following winter the writer undertook a study of the species. The results of this study were the decision that in North America we have not only true *Juncus bufonius* with certain well marked varieties and a number of trivial forms, but that in the western districts, from the Rocky Mountains to California, etc., much which has passed as *J. bufonius* is the well-known Old World species, *J. sphaerocarpus*. In order to verify his conclusions the writer sent materials and notes to the distinguished specialist on the *Juncaceae*, Prof. Franz Buchenau of Bremen, and after a detailed correspondence and a study of much material, generously augmented by critical specimens from Prof. Buchenau, he presents the following treatment of *J. bufonius* and its allies as known to him in North America.

¹ See RHODORA, iv. 170.

* Capsule trigonous, oblong to ovoid, 3 to 4.5 mm. long, in maturity rather closely embraced by the ascending perianth.

J. BUFONIUS, L. Sp. (1753) 328. Perianth-segments all acute or subulate-attenuate, longer than the capsule, the inner (petals) slightly shorter than the outer. Seeds ovoid, apiculate at base and apex. Plant varying greatly in size and habit, 0.3 to 3.5 dm. high, erect or matted, subsimple to freely branched; the flowers mostly scattered and secund on the elongate branches, occasionally "viviparous."—Damp open soil, roadsides, ditches, etc., nearly cosmopolitan.

Var. *CONGESTUS*, Wahlb. Fl. Goth. (1820) 38. Flowers similar, mostly aggregated in glomerules.—*J. Congdoni*, Watson, Proc. Am. Acad. xxii. (1887) 480; and various other synonyms (see Buchenau, Mon. Junc. 176).—Rather unusual in North America. Examined from MAINE, North Lubec (*Kate Furbish*): SOUTH CAROLINA, Sullivan's Island (*Ravenel*): TEXAS, Galveston (*Lindheimer*): CALIFORNIA, Mariposa and San Mateo Counties (*Congdon*).

Var. *halophilus*, Buchenau et Fernald, var. nov. Flores ultimi saepe approximati. Tepala externa acuta acutata vel subulato-acutata fructu fere semper longiora, interna breviora obtusa vel rotundato-obtusa interdum mucronata fructum subaequantia (vel paullo longiora breviorave). Semina apice truncata.—Hab. in locis salis. Quebec, Prince Edward Island, Maine, Massachusetts; Germany, Sicily.

Formae intermediae *Juncus bufonii* (genuini) et var. *halophili* haud raro occurrunt, praecipue in locis salis. Pro exemplo: *J. ranarius*, A. Sonjeon et E. Perrier (Billot, Annotations, 1859, 192) tepala interna fructum subaequantia vel paullo superantia¹ acuta vel obtusa et semina ovoidea praebet.

Ultimate flowers usually approximate. Outer perianth-segments acute, acutish, or subulate-acute, usually equalling or exceeding the capsule; inner segments (petals) shorter, obtuse or rounded, rarely mucronate, shorter than or barely equalling the capsule. Seeds truncate at apex.—Wet, usually brackish or alkaline soil. QUEBEC, marshes, Rivière du Loup, Aug. 15, 1892 (*G. G. Kennedy*), August 2, 1902, **type** (*E. F. Williams & M. L. Fernald*), Aug. 8, 1902, (*J. R. Churchill, W. W. Eggleston, M. L. Fernald*); brackish shore, New Carlisle, July 28, 1902, mouth of Bonaventure River, July 31, 1902 (*E. F. Williams & M. L. Fernald*): PRINCE EDWARD ISLAND, above the beach, Summerside, July 21, 1901, and bog, Tracadie Beach, July 30, 1901 (*J. R. Churchill*): MAINE, salt marshes, Cutler, July 4 and 7, 1902 (*G. G. Kennedy, E. F. Williams, J. F. Collins, & M. L. Fernald*): MASSACHUSETTS, Plum Island, New-

¹"Divisions du périgone . . . les trois extérieures acuminées, subulées, dressées . . . égalant la capsule ou la dépassant à peine, les intérieures plus largement scarieuses et moins roulées sur les bords, plus ou moins aiguës et un peu plus courtes que la capsule mûre" . . . Sonjeon et Perrier, l. c.

buryport (*Wm. Oakes*): GERMANY, Nienburg an der Weser, 1859 (*Nöldaka*); Weimar, August 22, 1888 (*Torges*): SICILY, Porto Empedocle, Girgenti, May 30, 1885, Paterno, Catania, June 2, 1885 (*W. O. Focke*).—A strongly marked extreme, in its best development, with its broad blunt short inner perianth-segments and short truncate seeds, seeming very distinct from true *J. bufonius*, but clearly connected with that common species by specimens from various regions. Thus *J. ranarius*, A. Sonjeon and E. Perrier, described from borders of salt water near Moûtiers, Savoie, has the inner segments thin and barely equalling or rarely exceeding the capsule, acute or obtuse, and the seeds ovoid. Other plants showing transitional tendencies in the perianth or in the shortening of the seed have been examined from such extreme regions as Lapland, South Australia, and Manitoba, so that it is probable that *J. bufonius*, var. *halophilus* is broadly distributed over the globe.

* * Capsule subspherical or short-ovoid, 2 to 3 mm. long: perianth-segments in maturity with loosely spreading-ascending or subsquarrose tips.

J. SPHAEROCARPUS, Nees in Funck's Correspondenz, Flora (1818) 521. Resembling *J. bufonius*, but very slender, rarely 2 dm. high: quickly distinguished by its small capsules and loosely ascending perianth-segments.—A well-known species of central and southern Europe and Asia. The following American specimens have been examined. ROCKY MOUNTAINS, without station cited (*Hall & Harbour*, no. 559, in part): IDAHO, common in wet places, valley of Big Potlatch River, Nez Perces County, June 4, 1892 (*Sandberg, MacDougal & Heller*, no. 312). OREGON, Swan Lake Valley, Klamath County, June 6, 1895 (*Applegate* no. 751, in part): CALIFORNIA, margin of pool, Mendocino City, May, 1866 (*Bolander*—material distributed in Engelmann's Herb. Junc. Bor.-Am. Norm., no. 28, as "*J. bufonius forma erecta sepalis subaequalibus capsulam retusam longe superantibus*."); Woodland, April 15, 1893 (*Blankinship*); Sisson, Siskiyou County, June, 1897 (*H. E. Brown*, no. 346); Chico, 1885 (*A. Gray*); San Isabel, May, 1852 (*Thurber*, no. 620). ARIZONA, vicinity of Flagstaff, alt. 7000 ft., July 8, 1898 (*MacDougal*, no. 241).

SUGGESTIONS FOR SPECIAL OBSERVATIONS.

Juncus balticus, Dethard, ordinarily a companion of *J. Gerardi* along the coast, is common on ledgy and gravelly river-banks of Aroostook County, Maine, with *J. alpinus*, var. *insignis*, *J. brachycephalus*, *Tofieldia glutinosa*, etc., and in an inland swamp of Genesee County, New York, with *Scirpus Torreyi*, *Zygadenus chloranthus*, etc. It should, therefore, be expected to accompany some of those characteristic species in the Champlain Valley.

Juncus brachycarpus, Engelm., found locally on the coast of New Haven County, Connecticut, and of Plymouth County, Massachusetts, will possibly be found in light soil near the coast of Rhode Island.

Juncus bulbosus, L., similar to *J. subtilis*, but with more numerous flowers in glomerules and blunt capsules, occurs in water and in boggy places in Labrador, Newfoundland, and on Sable Island, Nova Scotia, and should be sought on our northern borders.

Juncus castaneus, J. E. Smith, found on Newfoundland and Anticosti, and common on the northern Rocky Mountains, may yet be discovered on the mountains of northern New England.

Juncus conglomeratus, L. (*J. Leersii*, Marsson) similar to *J. effusus*, var. *compactus*, but with more rigid costate scapes, and with capsules tipped by a crown-like blunt mucro, occurs in southern Newfoundland and Nova Scotia and possibly reaches eastern Maine.

Juncus dichotomus, Ell., known near the coast of Connecticut and of Massachusetts, is to be sought in Rhode Island.

Juncus oronensis, Fernald, occurs on Rangeley Lake, Maine, and is probably in damp thickets or swamps of Coos County, New Hampshire.

Juncus scirpoides, Lam., has been reported from various New England stations, but all the specimens seen by the writer have proved to be other species. It occurs, however, along the coast from Florida to Long Island, and may well be expected to extend northward to Cape Cod.

Juncus stygius, var. *americanus*, Buchenau, one of the rarest and most evasive of American rushes, has been known in bogs of Somerset County, Maine, and Jefferson County, New York. It may, therefore, be hopefully sought in northern New Hampshire and Vermont.

Juncus trifidus, var. *monanthus*, Bluff & Fingerhuth, Compend. Fl. Germ. sect. i. (1825) 440, with the numerous basal leaves equalling the slender culms (2.5–6 dm. high) occurs locally along the mountains from Ulster County, New York, to Virginia and North Carolina, and should be looked for in New England, especially in Litchfield County, Connecticut, and Berkshire County, Massachusetts.

Juncus Vaseyi Engelm., found locally near the Rangeley Lakes, and in the Penobscot and St. John valleys, Maine, and in the valley of the Black River, Jefferson County, New York, is to be expected in northern New Hampshire and Vermont.

THE BLACK SPRUCE IN RHODE ISLAND.—In 1888 Mr. J. L. Bennett recorded ¹ *Picea nigra*, Link, as occurring in "Johnston, Foster, etc." Apparently no specimens were preserved by him to corroborate this statement and as a result certain botanists have been somewhat skept-

¹ Plants of Rhode Island (1888), p. 40.

tical of its occurrence in Rhode Island. Mr. L. L. Dame in his excellent little hand book² says of it "Rhode Island — not reported," meaning that he had seen no specimen from the state. Sometime during last winter or early in the spring of the present year (1903) Mr. H. W. Preston called the writer's attention to this statement of Mr. Dame's, and suggested that we make special effort to get some herbarium specimens as both of us recollected having seen a group of the trees within a year in Scituate (Rhode Island), while riding on one of the Danielson electric cars.

About this time Mr. G. W. Burlingame sent to the Brown University Herbarium, for identification, a specimen of the Black Spruce which was collected, as I learned later, at the station just mentioned. Mr. Preston has since then visited this place and photographed the trees.

Early in May the writer spent a day about Wakefield Pond, Burrillville, in company with Rev. R. F. Cheney of Pascoag. At the time of our visit the water appeared to be higher than usual — though it may not have been — and what looked at a short distance like several ordinary islands proved, upon closer inspection, to be partially or wholly submerged islands — if such an expression be allowed — often with only the bushes and small trees projecting above the water.

These trees were nearly all Black Spruce and we counted more than a hundred on three or four of these "islands." Many of the spruces were in fruit while, in some cases, scarcely a meter in height. Perhaps the tallest one we saw was growing on the mainland — it was estimated to be 5 or 6 meters high. It is probable that the Black Spruce occurs at quite a number of stations in northern Rhode Island as it has been reported from at least six different towns, although the writer has personally seen it in but two of them, as stated.— J. FRANKLIN COLLINS, Providence, Rhode Island.

PANICUM COMMONSIANUM IN CONNECTICUT.—In June, 1902, and again a year later I collected, in a "sand-blow" in South Windsor, Connecticut, a plant which proves to be *Panicum Commonsianum*, Ashe. There were a few scattered clumps of it, growing in pure sand, some with *Carex siccata* and other plants of dry ground, some in places where nothing else had the courage even to try to exist. Mr. Fernald

² Dame and Brooks: Handbook of the Trees of New England (1902), p. 12.

informs me that this species of *Panicum*, originally described from the pine-barrens of New Jersey, has not before been reported from New England. I have never seen the New Jersey barrens, but I imagine the region in which I found my *Panicum* is not unlike them. It is a tract of low sand hills and plains, covered for the most part with rather sparse and scraggy woods, but here and there bare of all vegetation. It was on the edge of such a "sand-blow" that the *Panicum* grew. *P. xanthophysum* is another denizen of the same region, which can be found by a sufficiently patient seeker. It took me an hour and a half last summer to find two small plants—but it is there.—C. A. WEATHERBY, East Hartford, Connecticut.

SOME INTERESTING MOSSES FROM A SOUTHERN VERMONT PEAT-BOG.—A peat-bog of Pownal, Vermont, which furnishes a station for several flowering plants of northern range, is also the abode of several mosses considered uncommon in New England. Especially worthy of mention are the following: *Hypnum cuspidatum*, L., *Hypnum vernicosum*, Lindb., *Polytrichum strictum*, Banks., *Camptothecium nitens*, Sch., *Meesia tristicha*, Br. & Sch. and *Dicranum Bonjeani*, DeNot. All are species of more or less northern tendencies. All except the last are included in the Vermont list, but with not more than one or two stations, generally much farther north. The *Polytrichum* is a species associated in New England rather with alpine mountain summits than with lowland peat-bogs. The *Dicranum* Dr. True characterizes as representing the typical form of the species, a form which he considers rare. The species has not been included in the Vermont list. The mosses of this peat-bog, which is an especially wet and spongy one, if the matter is one admitting of comparison, are by no means profuse in the matter of spore-production. The only one of the above to fruit even comparatively freely is the *Dicranum*. *Meesia* is sufficiently conspicuous with its distinctly three-ranked leaves, and I was doubly delighted to find the past summer a small tuft bearing numerous sporophytes, very striking indeed with long seta and pendulous capsule upon a long, erect apophysis. In the summer of 1902 a small tuft of *Camptothecium* also produced fruit, an uncommon occurrence for the species. The other species mentioned were sterile. Of more common sorts, I noted *Aulacomnium palustre* sparingly fruited in 1901, though it

generally contents itself with pseudopodia and gemmae, *Sphagnum acutifolium* in 1902, and *Sphagnum cymbifolium* in 1903. The fruiting specimens of *Sphagnum* were in either case at the top of large, compact tufts where conditions were slightly less moist. Of the less common species of *Sphagnum* none appeared to be fructifying.—A. LEROY ANDREWS, West Virginia University, Morgantown.

Spiranthes Grayi, NOM. NOV. About three years before the publication of the fifth edition of "Grays' Manual," A. H. R. Grisebach, in the "Flora of the British West Indian Islands" described a new species of *Spiranthes* as *S. simplex*. In the fifth edition of the "Manual" Asa Gray described under the same name a new species, native to the United States. As the two species described are distinct this duplication of specific names in the genus is unfortunate and, in a broad sense, confusing, therefore, I propose to call our native plant *S. Grayi*.—OAKES AMES.

Vol. 6, no. 61, including pages 1-24 and plate 50 was issued 30 January, 1904. Mr. Fernald's article, Two Northeastern Allies of Salix lucida (reprinted in advance) was issued 29 December, 1903.



Blanche Ames, del.

SPIRANTHES NEGLECTA, Ames, n. sp.

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